

- b. means for aligning a user's hands to a home set of said keys on said back side, and
- c. means for maintaining overall position of said hands to said home set while said hands rotate to access said input keys that are not of said home set,

whereby said user can hold said device and rapidly input data.

37. The device of claim 36 wherein having means for allowing simultaneous holding of said device and rapid data entry.

REMARKS – General

By the above amendment, Applicant has rewritten all claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The First Objection to The Claims

The first objection was claims 2-14 and 17 due to informalities: In claims 2-14 the claims end in “,” and should end in “.” and in claim 17 the claim should end with “.”.

I have completed each of the dependent claims with “.” Instead of “,” as shown in the revised claims above.

The Claims Rejection Under 35 U.S.C. § 102

The second item was rejection of claims 1-7, 10, 12, 14 and 16-18 as being anticipated by Conway (US Patent 5,410,333).

Revised and narrowed claim now distinguishes over reference.

In view of Conway, I have revised the main claims, adding statements to show the position and purpose of the handles and contours in my invention.

Conway's invention does not facilitate lining up the hands with the home set of keys. In Fig 20 below I have superimposed a set of hands on Conway Fig 3, at approximately the same scale of a standard pitch QWERTY keyboard. This is a "bottom view" of the back side of the device, while said user is standing and holding the device at such an angle for viewing the front side of the device.

Notice that said user's hands do not line up with the top indents of Conway's Fig 3 device. As shown in Fig 20 below, there is a definite gap between the top of the hands (by the index fingers) and the top indent of Conway's device. The gap is illustrated by the dotted lines and arrows in Fig 20 below. With such a gap, it's not practical to try to hold Conway's device while inputting data unless the device was supported by some other means.

Conway describes the need for additional support when using his device in multiple places in his description.

Conway's description of his Fig 1 describes it as "mounted on a support arm." (Col. 4 line 65). In contrast my invention does not require a support arm since

the presence and location of my handles and contours allow the user's hands to simultaneously hold the device, yet rapidly input data.

Conway's Figs 2, 3, and 4 depict the same embodiment, but different views as noted by Conway Col. 7 lines 1-5. All have the same deficiency that require the use of a separate support arm or neck strap to allow the user to rapidly input data.

Conway's Fig 5 also has the same deficiency, as noted by the location of the trackball 66 (described in Conway Col. 6, line 50 and lines 54-60). Given the location of the trackball and its intended access by the user's thumb, it's clear to see that there is a substantial gap between the top indent edge of Conway's device and the top of the user's hand at the base of the index finger.

In contrast, the relative position of the thumb to the top of the hand can be seen in my application Figs 13 and 14. In my embodiments the thumb is positioned to conveniently access the three oval keys BKSP, SPACE, ENTER which is part of my (18) front side right hand text or input control. Please notice that the position of my right top guide contour 26 lines up with or is slightly below my three thumb keys BKSP, SPACE, and ENTER.

If the user tries to use Conway's invention without the support arm or neck strap as Conway requires, it would be a frustrating experience. If said user were to hold the Conway's Fig 3 device substantially vertically as shown in my Fig 20 and try to type and rapidly input data, the device would tend to gravitate downward. This is because said user must rotate their hands slightly when reaching certain keys, such as the letters B and N on a QWERTY keyboard. As said user loosens his or her grip on the device to reach these letters, the device would slip

downward. This would force said user to continually manually realign his or her hands to the home set of keys, which would slow down data entry considerably.

I have noted a similar deficiency regarding operating Goodenough's device in my patent application.

Conway tries to overcome limitations by stating that his embodiment " may be supported during operation by a neck strap depending from the operator, or may be supported directly on a computer keyboard operator's lap, a table or workstation surface. " (Conway Col. 4 lines 40-43)

Conway also describes his keyboard as "mountable on a spring balanced adjustable arm, a neck strap or other appropriate support mechanism" (Conway Col. 2, line 52).

This is different from my invention, which does not need a neck strap or a table or a workstation surface to allow the user to simultaneously hold the device and rapidly input data.

Fig 20: Conway Fig 3 with Hands Superimposed Showing Definite Gap Between Top of Hands and Indent Portion

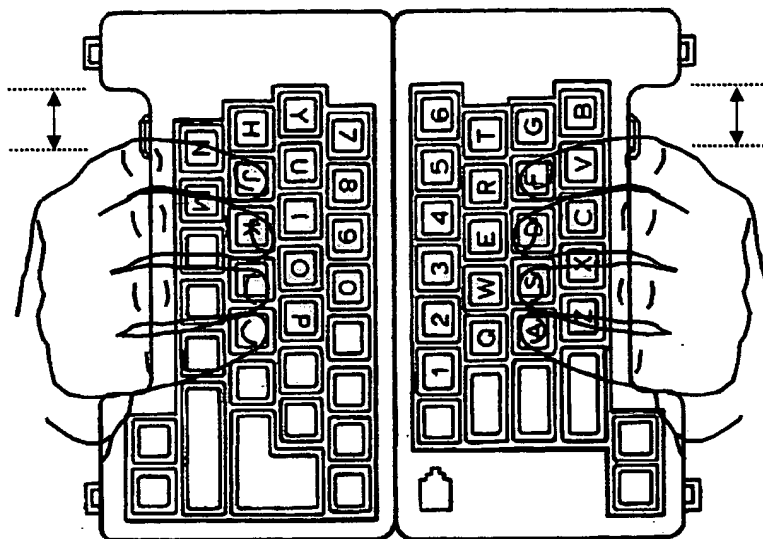


FIG 20

The revised claim recites novel physical features, satisfying 35 U.S.C. § 102:

My revised claims specify the location of the upper feature of my handles and contours to distinguish it under § 102. Fig 21 below shows a user's hands holding my invention. The handles and contours constrain said user's hands to line up with the home set of keys, even as said user simultaneously holds the device and rotates his or her hands to access keys off the home sets.

The detailed description of my application states that said user's hands rest against the top guide contours 26, 30, automatically lining up said user's fingers on the QWERTY home set, with the index fingers naturally lining up with the F and the J keys for the left and right hands respectively. This is confirmed by Fig 21 below.

Fig 21: Hands Superimposed on Fig 12 Embodiment of My Invention

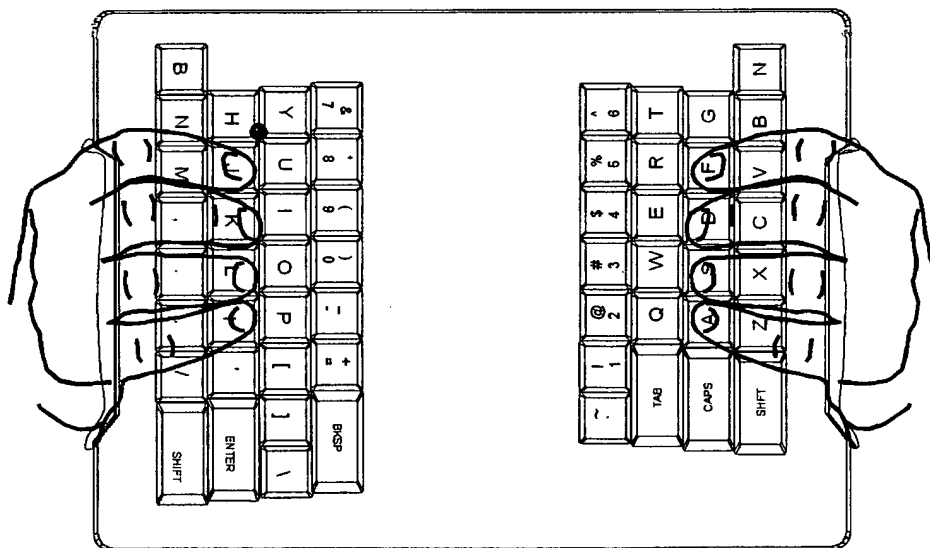


FIG 21

The Objection to the Specification And The Claims Rejection Under 35 U.S.C. § 103

The second item was rejection of claims 8, 9, 11, and 13 rejected under 35 USC 103(a) as being unpatentable over Conway (US Patent 5,410,333) in view of Goodenough (US Publication 2003/0193477).

The revised claim recites unobvious physical features, satisfying 35 U.S.C. § 103:

The presence, placement, and purpose of the handles and contours in my invention is not obvious to someone ordinarily skilled in the art. I have listed some of the reasons why it's not obvious.

Unexpected results – the results achieved by the invention are new, unexpected, superior, disproportionate, unsuggested, unusual, critical, and/or surprising.

The presence, purpose, and placement of my handles and contours provides superior rapid data entry than the prior art. When using a working model of my invention, the hands stay in their proper placement, even when the hands must loosen grip and rotate to access keys off the home set.

While it is certainly possible to use a device similar to Conway, typing is not as efficient or rapid because said user's hands would quickly become misaligned to Conway's home set keys. As shown in Fig 20 above, Conway's indents do not provide the benefit of my invention.

The rapid typing performance on my invention with an effective set of handles and contours is far superior than one without these features. Indeed my earlier models and my first working model did not have these features. It was after methodical experimentation and construction of additional working models did the realization of the presence, purpose, and location of the handles and contours become apparent.

My first model without the handles and contours worked, but the subsequent working models with effective handles and contours provided a dramatic gain in usability. Such features allow said user's hands to both hold the device and rapidly input data.

Unrecognized problem – problem solved by this invention was never before even recognized. Conway, Phillips, Goodenough.

None of the prior art patents found describe the hand movement and rotation while typing on a QWERTY keyboard. The prior art authors did not anticipate or recognize the problem, so they did not provide a means to constrain said user's hands to line up on the home set of keys.

While Conway shows an indented portion in their Fig 3 of their patent, I have shown in my Fig 20 that the indented portion does not constrain the hands to the home set placement as in my invention. Conway does not recognize or describe the problem in his description.

Phillips cites Conway as prior art, yet he also does not recognize or address the problem. Goodenough's application is after Phillips and Conway, he did not recognize the problem either.

My initial models and my first working model did not have the handles and contours. It was after testing the first working model that I realized it could be better, specifically the need for a means of keeping the hands positioned to the proper home set during use. It took experimentation to discover and refine the location of the handles and contours.

Misunderstood reference: The reference does not teach what the examiner relies upon it as supposedly teaching.

Conway does not mention the hand rotations needed to access all of the keys on a keyboard, Conway does not show position of his top indent to line up said user's hands on the home set of keys.

References teach away: The references themselves teach away (expressly or by implication) from the suggested combination.

Note that Conway's new and improved keyboard drawings (Fig 6-Fig 10) feature straight sides rather than the indents drawn in Fig 3 of Conway. Reference Conway Col. 6 row 64 and Fig 6. In fact Conway's preferred embodiment of his invention (Figs 8 and 9) also feature straight sides. See Conway column 7 row 5, and rows 15-16 for a description of the preferred embodiment.

Dependent Claims Addressed for 35 U.S.C. § 103:**Claim 8 – Inserts for Handles**

Claim 8 was rejected because a person with ordinary skill in the art to modify Conway's device with adjustable screw inserts of Goodenough's device to accommodate different hand sizes.

Goodenough may have screw inserts (12 and 19) to accommodate for different hand sizes, but he still does not allow for handles and contours to line up the hands to the home set of keys.

Under my revised claims, the above combination would still not be able to constrain the hands to the home set as said user rapidly inputs data. That is because the combination of the prior art still lacks the means of keeping the hands aligned to the proper home set keys as said user has to loosen hand grip to access certain keys while typing.

Claim 9 – Handle Sensors

Claim 9 was rejected because a person with ordinary skill in the art could modify Conway's invention with Goodenough's switches.

Under my revised claims, the above combination device would still lack the crucial function of aligning said user's hands to the home set keys while said user was rapidly inputting data.

Claims 11, 13 – Front Side Display and Keys, Front Surface Features

Claim 11 and 13 was rejected as a person with ordinary skill in the art could combine the display of Goodenough on Conway's invention.

Under my revised claims, the above combination would still not allow said user to maintain hand position relative to the home set of keys as said user inputs data, particularly if said user has to access certain keys that require loosening hand grip and / or rotation of the hand.

Claim 15 – Single Rows of Keys and Front Shifters

Claim 15 was rejected as a person with ordinary skill in the art could modify Conway's invention with a single row of back side keys and include front control keys as taught by <http://kotishivu.mtv3.fi/seppo/example2.html> (GKOS), since the latter teaches it's advantageous to provide a comfortable hand-held device.

Under my revised claim, the above combination would not allow said user to quickly position their hands and maintain that position as in my invention.

One example would be if said user of Conway / GKOS modified device were to be interrupted and had to take one hand away for whatever purpose. When said user places that hand back on the device, said user would have to manually position his or her hand to seek out the keys. That may entail flipping the device over to visually sight the keys before resuming operation.

In contrast the same person using my invention could simply let the properly positioned handles and contours guide his or her hands to the proper key placement. This would be a quick action that would not need visual confirmation, allowing said user to resume rapid data entry immediately.

A second example would be if said user were interrupted and had to put the device down. As in the first example, said user could resume typing more quickly using my invention than with Conway / GKOS.

Non-Applied Reference – Willner et al.

I have reviewed Willner et al, and have determined it does not render the present invention obvious. Willner et al bases an input device from a game controller, adding additional keys that can input a variety of data by selective combination.

Willner et al does not mention hand rotation, and the device embodiments shown do not accommodate hand rotation as described and shown in the present invention. Willner describes and claims “contiguous contact” or unbreaking contact with regards to hands and the device. Also supporting this is that Willner et al emphasizes the fingers not leaving the home key positions, meaning the hands remain in continuous grip with the device. Willner et al. does not describe hand rotation or propose a way to accommodate the rotation. The end result is a keyboard that forces the fingers to stay on one set of keys and force a user to learn a new key entry method.

Willner et al is a substantially different form factor than my present invention, and does not accommodate the front panel display as my present invention.

Willner et al has a different key entry method and coding than any of my embodiments shown, and a substantially longer learning curve than my invention for someone who is used to a QWERTY keyboard. Even with the QWERTY compatible key assignment of Table 3 of Willner et al, the key assignments and strokes are substantially different from said user of a normal keyboard or when

using my invention. For example Willner et al describes four way movement for the index fingers, and two way movement for the other fingers.

Accordingly the applicant submits that the dependent claims are a fortiori patentable and should also be allowed.

Conclusion

For all the above reasons, applicant submits that the claims are now in proper form, and that the claims all define patentably over the prior art. Therefore I submit that his application is now in condition for allowance, which action I respectfully solicit.

Conditional Request for Constructive Assistance Under to M.P.E.P. § 2173.02 and § 707.07(j)

Applicant has emended the claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions from the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible without the need for further proceedings.

Very respectfully submitted,

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Date: April 19 2005

Inventor Signature: Joel Dechene